Title: IMAGE PROCESSING APPARATUS AND IMAGE PROCESSING SYSTEM
Inventor(s): Eiichi SAKAUE et al.
DOCKET NO.: 016887/1029

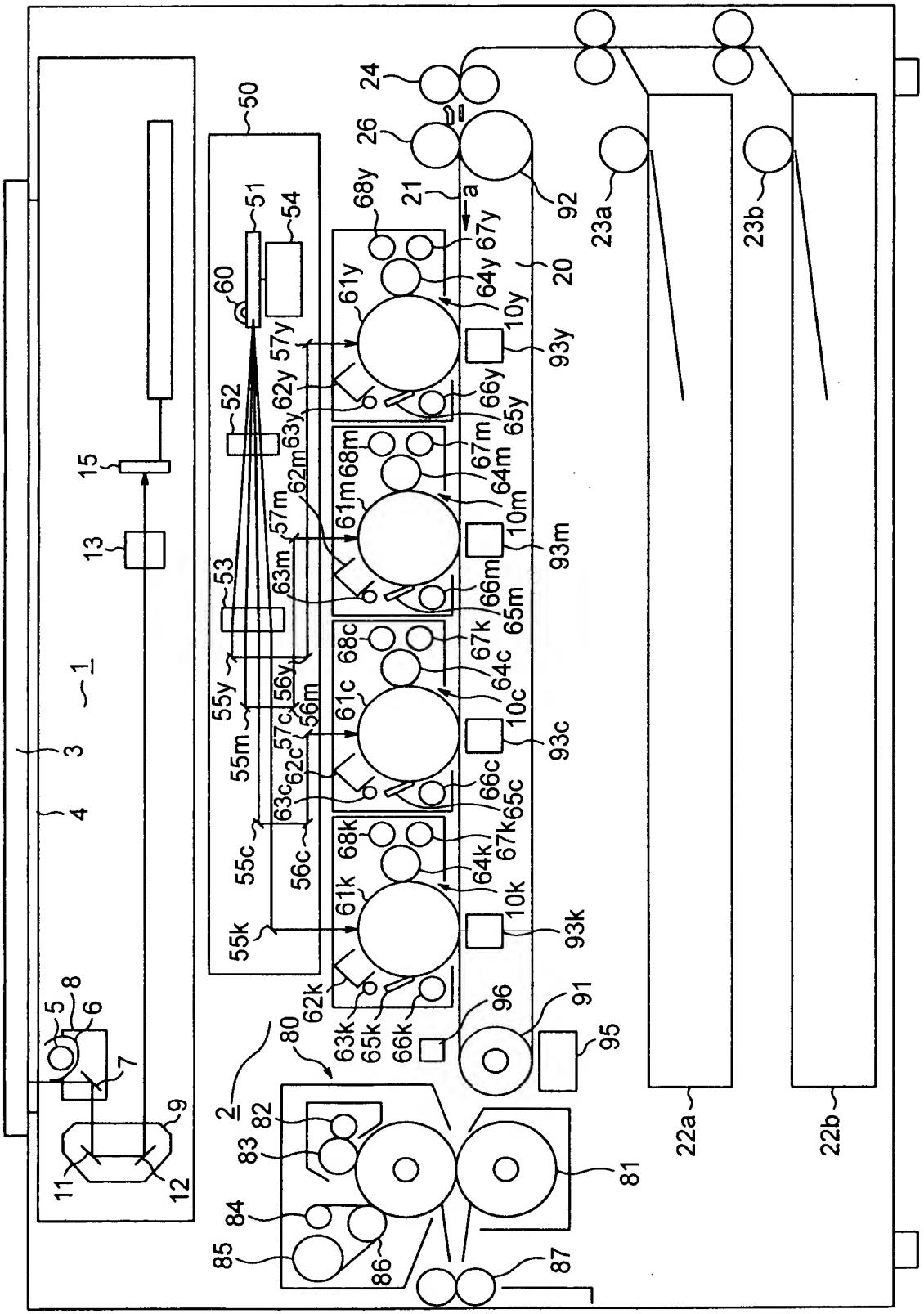

FIG. 1

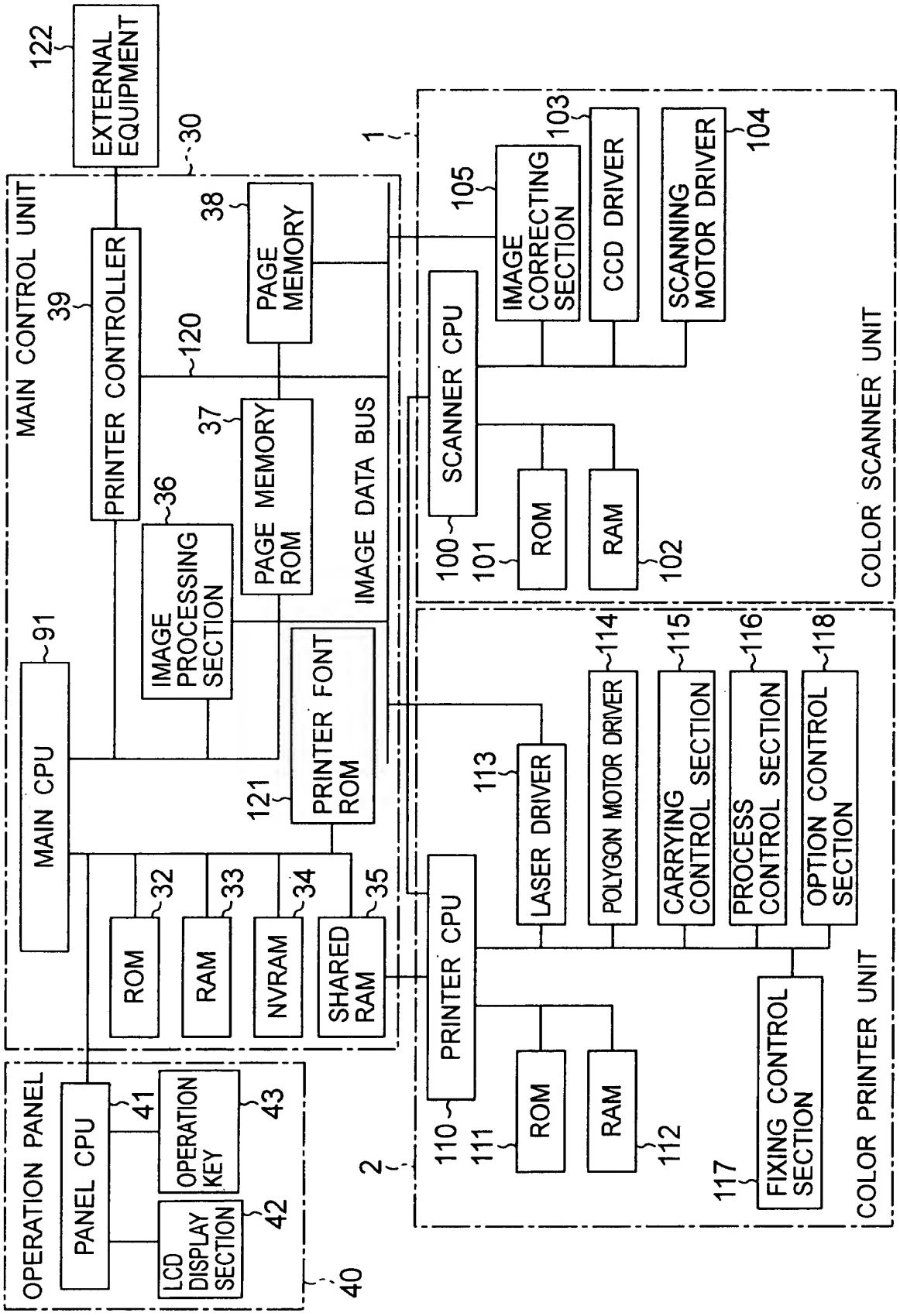
MAIN CONTROL UNIT
EXTERNAL EQUIPMENT
122
30
PRINTER CONTROLLER
39
PAGE MEMORY
38
120
IMAGE PROCESSING SECTION
36
PAGE MEMORY ROM
37
IMAGE DATA BUS
MAIN CPU
91
PRINTER FONT ROM
121
ROM
32
RAM
33
NVRAM
34
SHARED RAM
35
OPERATION PANEL
PANEL CPU
41
OPERATION KEY
43
LCD DISPLAY SECTION
42
40
1
IMAGE CORRECTING SECTION
105
CCD DRIVER
103
SCANNING MOTOR DRIVER
104
SCANNER CPU
100
ROM
101
RAM
102
COLOR SCANNER UNIT
2
PRINTER CPU
110
LASER DRIVER
113
POLYGON MOTOR DRIVER
114
CARRYING CONTROL SECTION
115
PROCESS CONTROL SECTION
116
OPTION CONTROL SECTION
118
ROM
111
RAM
112
FIXING CONTROL SECTION
117
COLOR PRINTER UNIT

FIG. 2

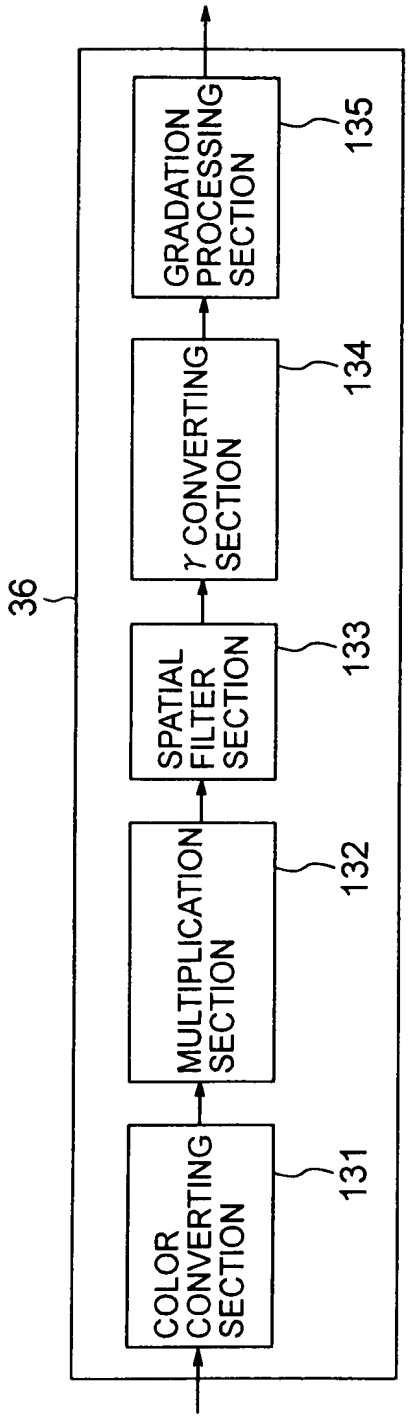
36
COLOR CONVERTING SECTION
131
MULTIPLICATION SECTION
132
SPATIAL FILTER SECTION
133
γ CONVERTING SECTION
134
GRADATION PROCESSING SECTION
135

FIG. 3

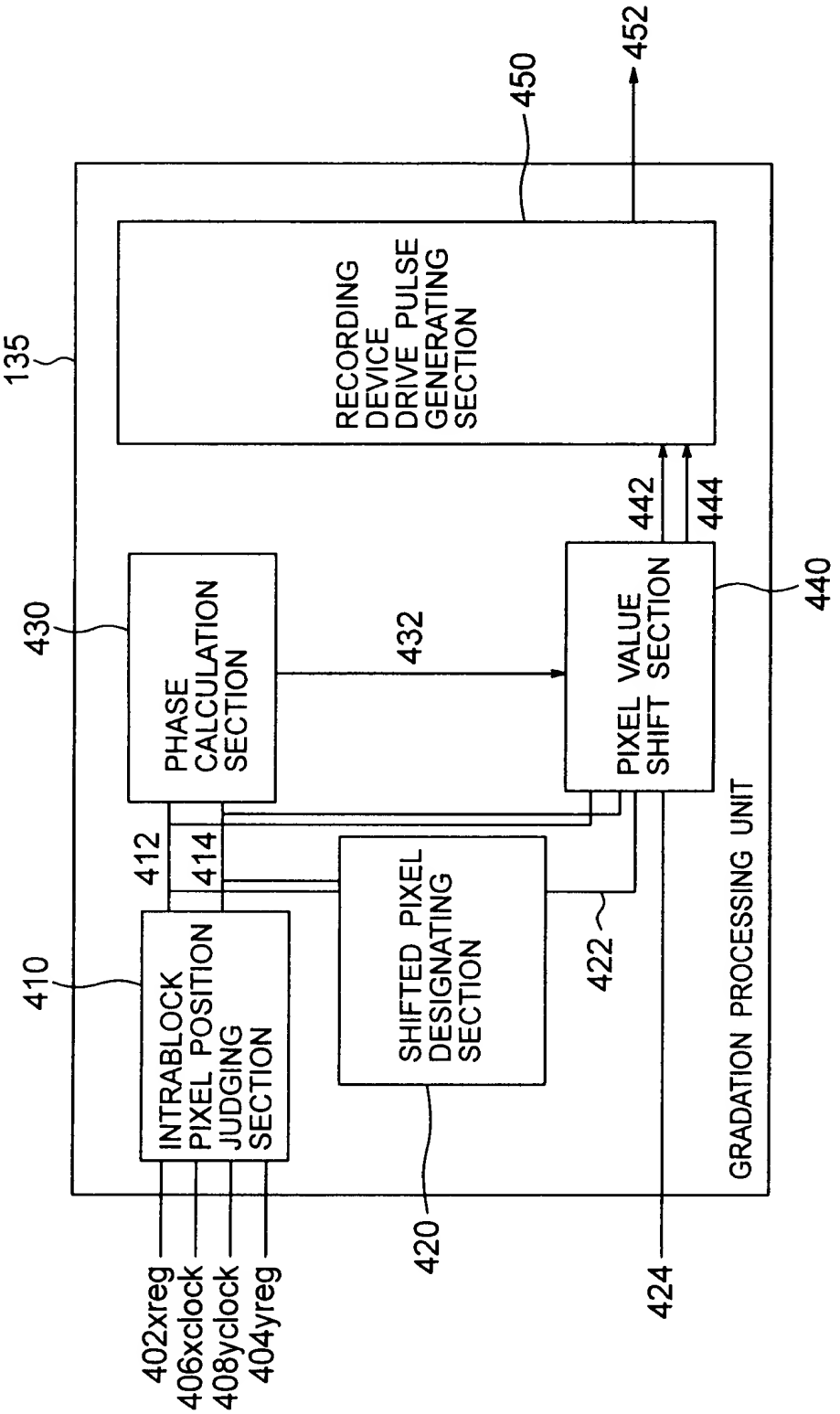
135
RECORDING DEVICE DRIVE PULSE GENERATING SECTION
450
452
430
PHASE CALCULATION SECTION
432
PIXEL VALUE SHIFT SECTION
440
442
444
412
414
410
INTRABLOCK PIXEL POSITION JUDGING SECTION
SHIFTED PIXEL DESIGNATING SECTION
422
420
424
GRADATION PROCESSING UNIT
402xreg
406xclock
408yclock
404yreg

FIG. 4

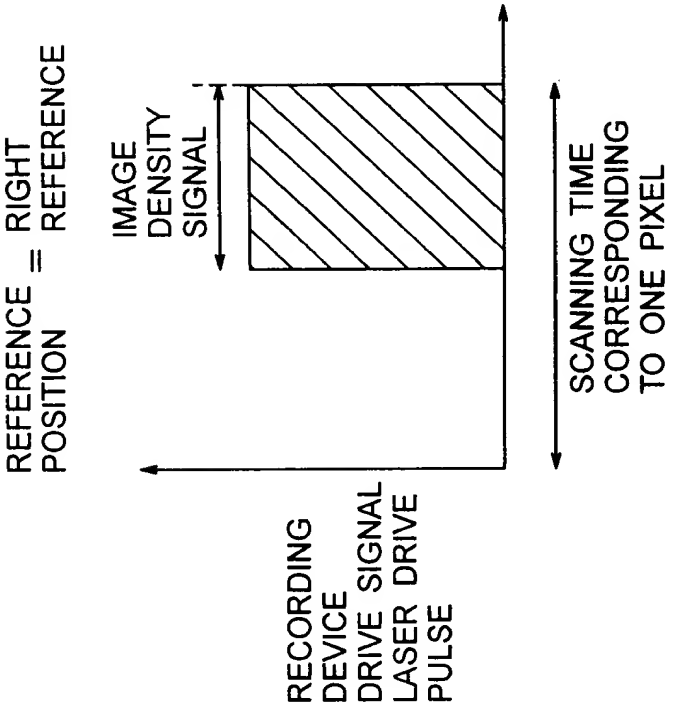
REFERENCE POSITION = RIGHT REFERENCE
IMAGE DENSITY SIGNAL
SCANNING TIME CORRESPONDING TO ONE PIXEL
RECORDING DEVICE DRIVE SIGNAL LASER DRIVE PULSE

FIG. 5B

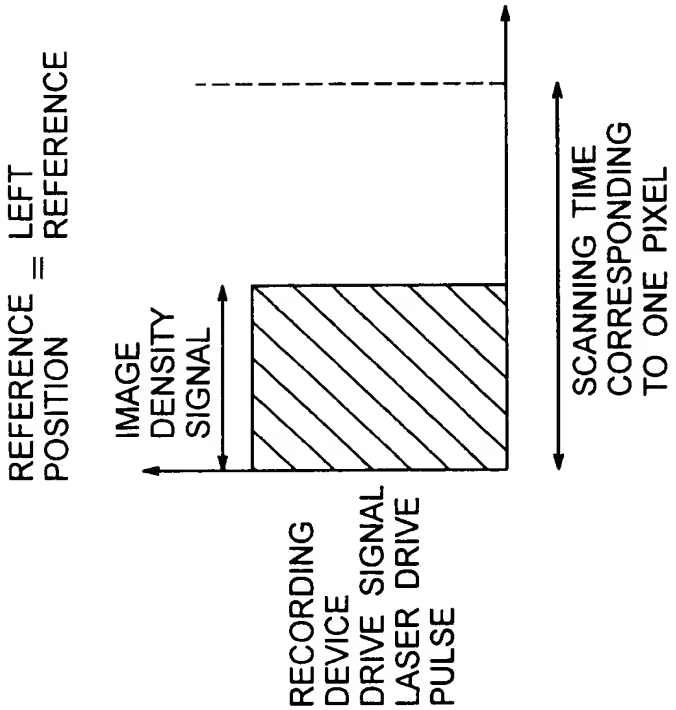
REFERENCE POSITION = LEFT REFERENCE
IMAGE DENSITY SIGNAL
SCANNING TIME CORRESPONDING TO ONE PIXEL
RECORDING DEVICE DRIVE SIGNAL LASER DRIVE PULSE

FIG. 5A

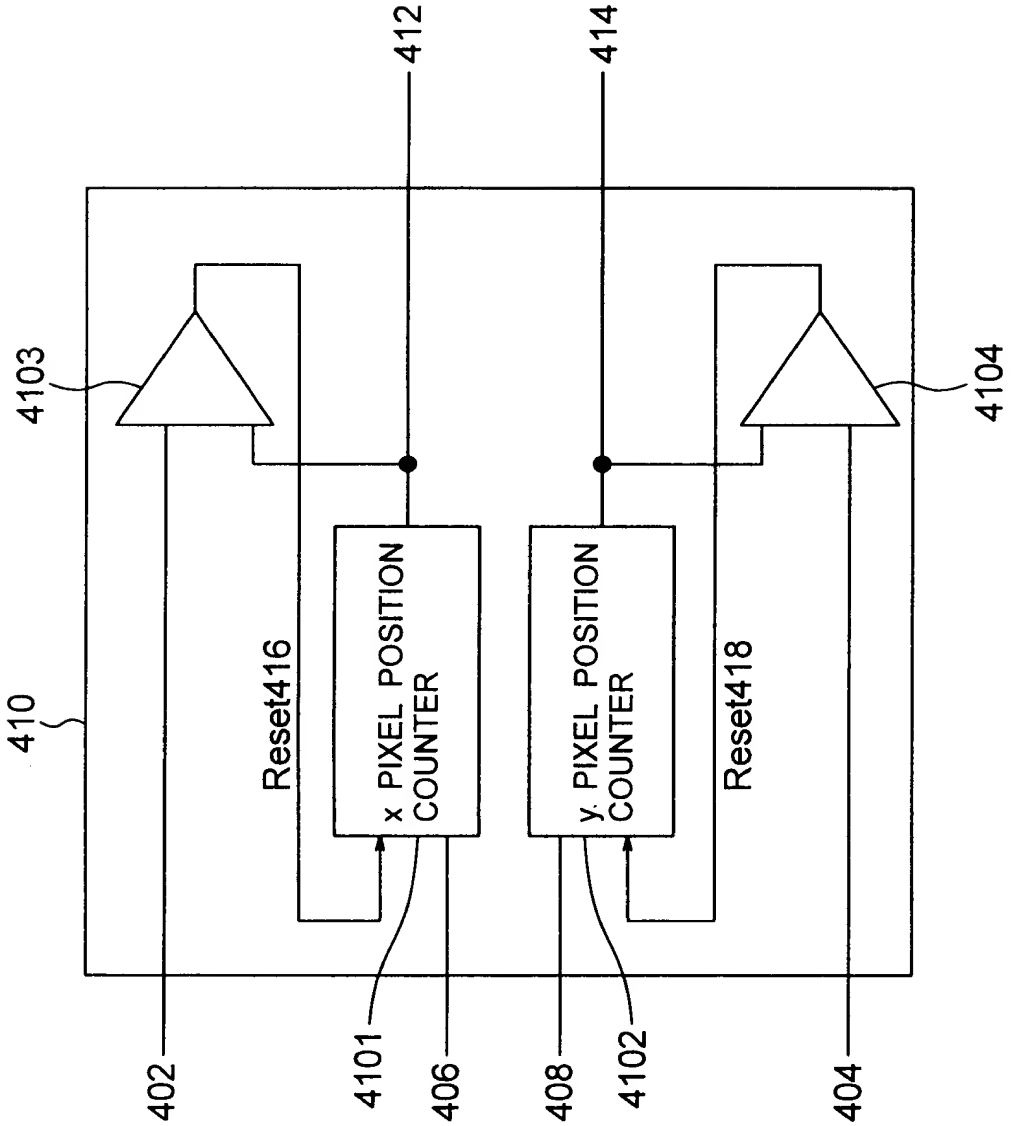
412
414
4103
4104
410
Reset416
x PIXEL POSITION COUNTER
y. PIXEL POSITION COUNTER
Reset418
402
4101
406
408
4102
404

FIG. 6

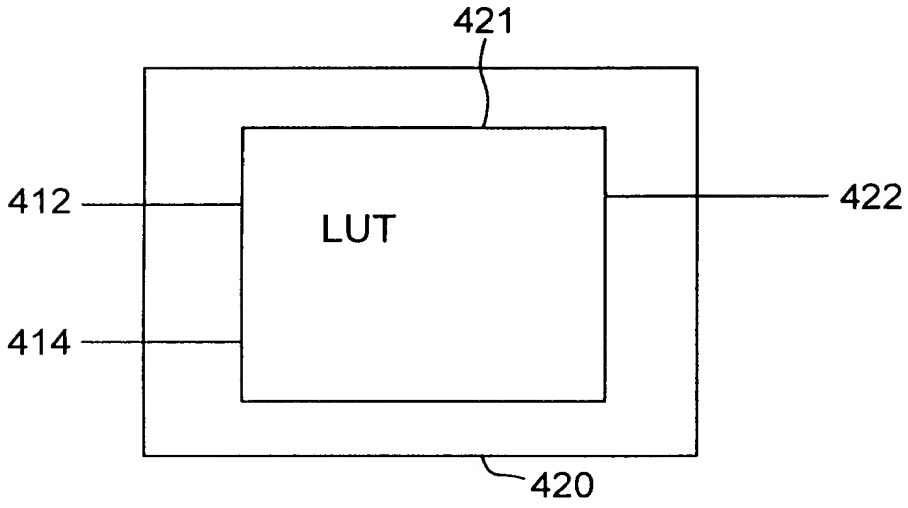

FIG. 7

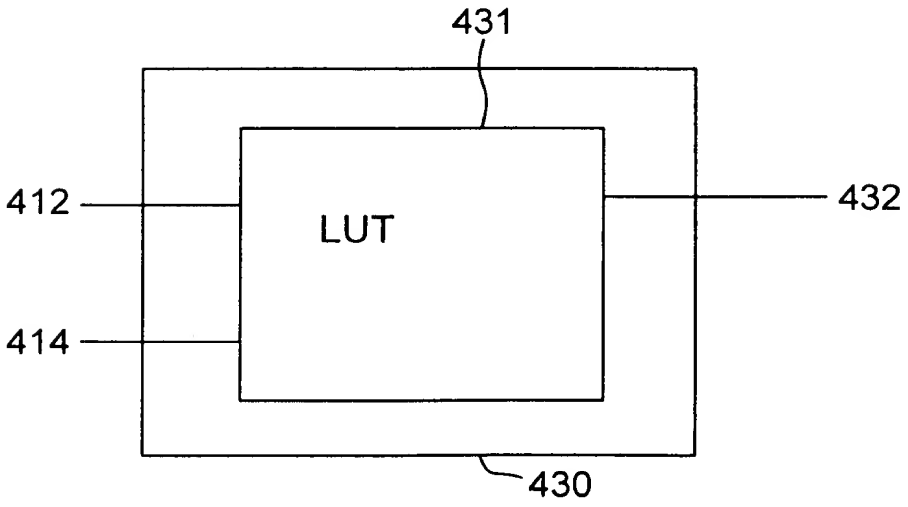

FIG. 8

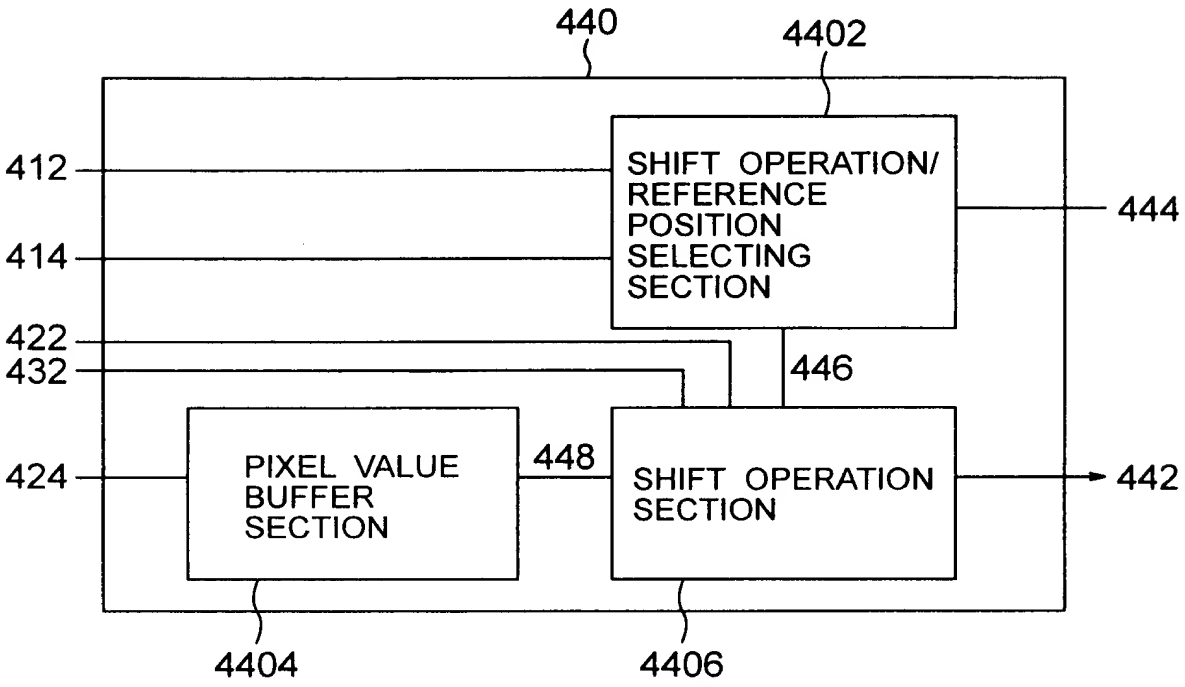
440
4402
412
414
422
432
424
SHIFT OPERATION/
REFERENCE
POSITION
SELECTING
SECTION
444
446
PIXEL VALUE
BUFFER
SECTION
448
SHIFT OPERATION
SECTION
442
4404
4406

FIG. 9

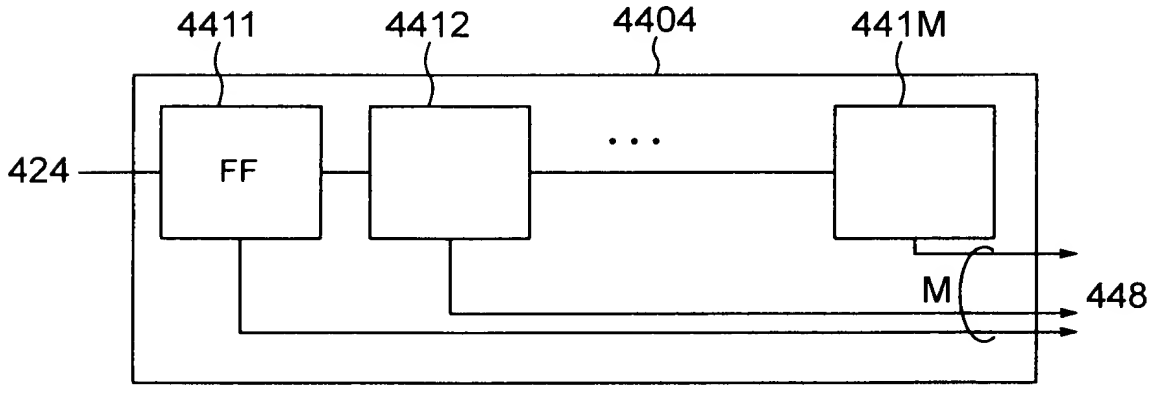
4411
4412
4404
441M
424
FF
...
M
448

FIG. 10

FIG. 11

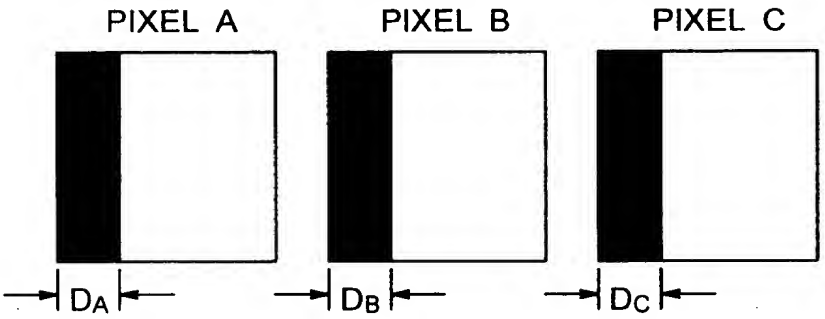

FIG. 12

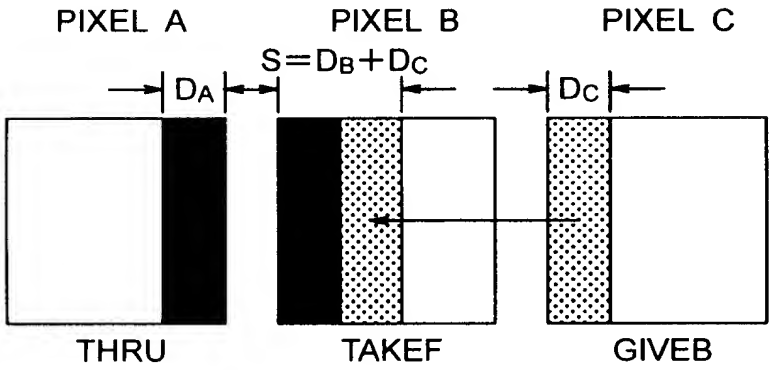

FIG. 13A

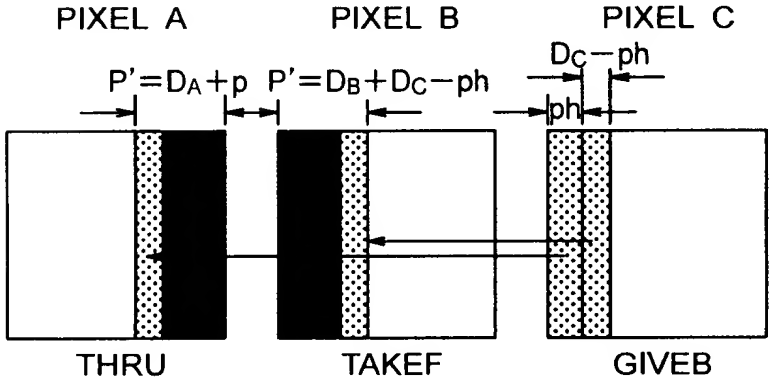

FIG. 13B

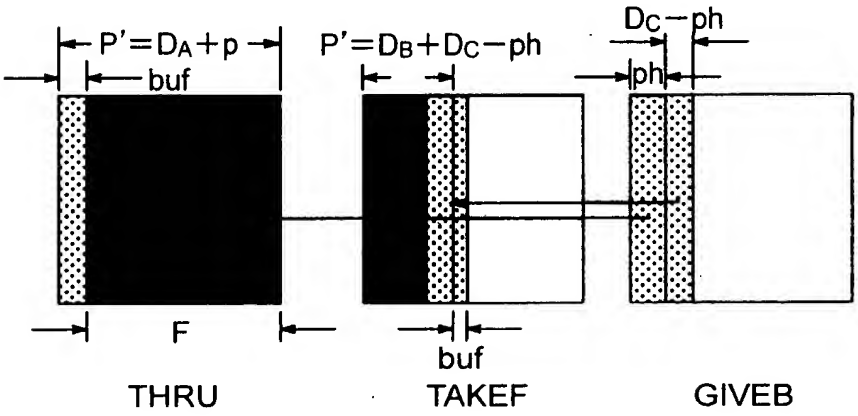

FIG. 14

OPERATION NAME	PIXEL VALUE OF PIXEL TO BE PROCESSED	WRITE SHIFT BUFFER VALUE	CONDITION
THRU	0	P	Ph≧0 & Pf1+Pf2+P≧xff×2
	Pf1+Pf2+P−xff×2	xff×2−Pf1+Pf2	Ph≧0 & Pf1+Pf2+P<xff×2
	P+Ph	Ph	Ph<0 & Pf1+Pf2≧−Ph
	P+P1+P2	−Ph−(Pf1+Pf2)	Ph<0 & Pf1+Pf2<−Ph
TAKEF	xff	P+Pf+Pbuf−xff	P+Pf+Pbuf≧xff
	P+Pf+Pbuf	0	P+Pf+Pbuf<xff
GIVEB	Pbuf	0	

FIG. 17

OPERATION NAME	PIXEL VALUE OF PIXEL TO BE PROCESSED	WRITE SHIFT BUFFER VALUE	CONDITION
THRU	P	0	Ph≧0 & Pf1+Pf2+P≧xff×2
TAKEF	xff	P+Pf−xff	P+Pf≧xff
	P+Pf	0	P+Pf<xff
GIVEB	Pbuf	0	

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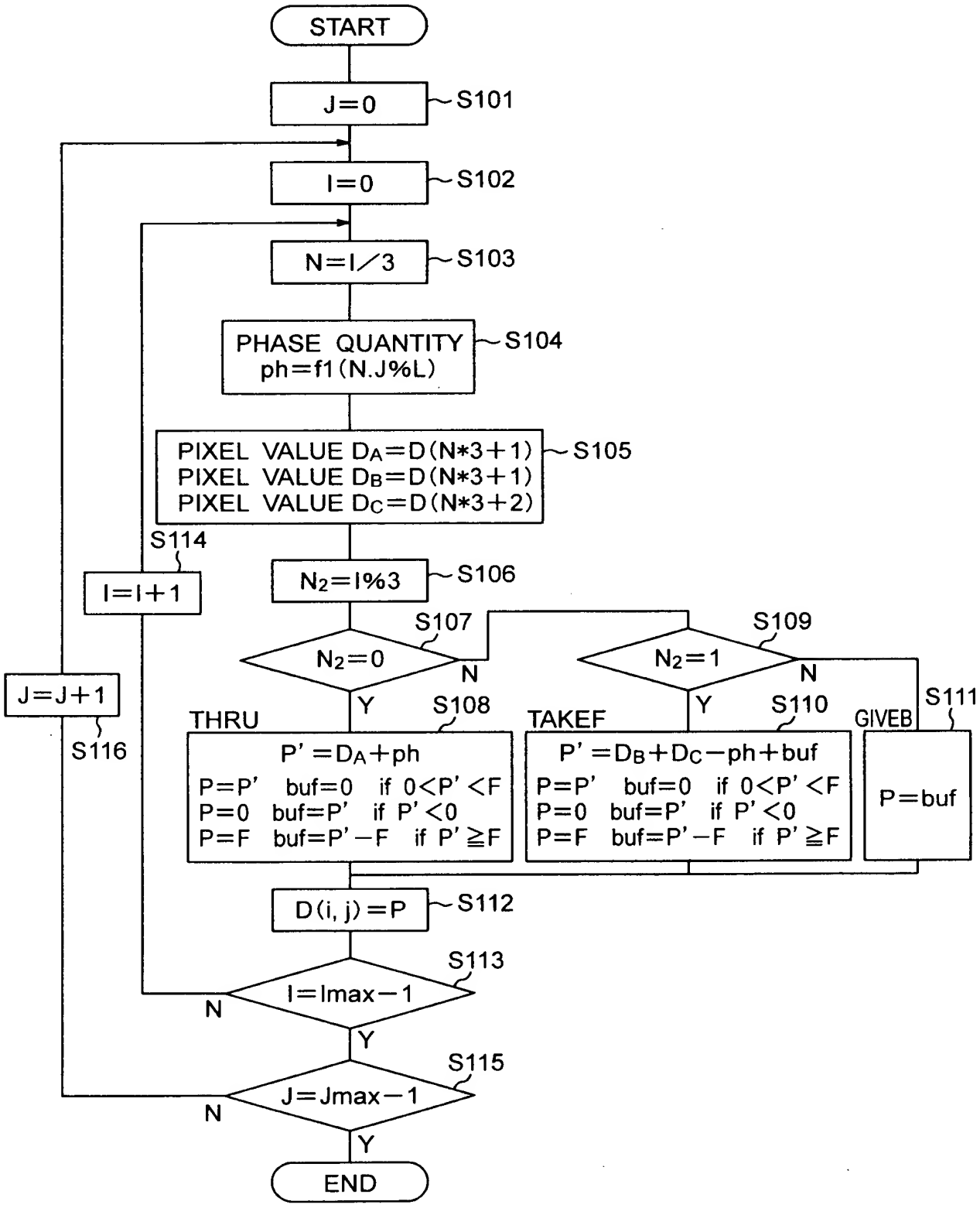
START
J=0
S101
I=0
S102
N=I/3
S103
PHASE QUANTITY
ph=f1(N.J%L)
S104
PIXEL VALUE DA=D(N*3+1)
PIXEL VALUE DB=D(N*3+1)
PIXEL VALUE DC=D(N*3+2)
S105
S114
I=I+1
N2=I%3
S106
S107
N2=0
N
Y
S109
N2=1
N
Y
S108
S110
S111
THRU
TAKEF
GIVEB
P'=DA+ph
P=P' buf=0 if 0<P'<F
P=0 buf=P' if P'<0
P=F buf=P'-F if P'≧F
P'=DB+DC-ph+buf
P=P' buf=0 if 0<P'<F
P=0 buf=P' if P'<0
P=F buf=P'-F if P'≧F
P=buf
J=J+1
S116
D(i, j)=P
S112
S113
I=Imax-1
N
Y
S115
J=Jmax-1
N
Y
END

FIG. 15

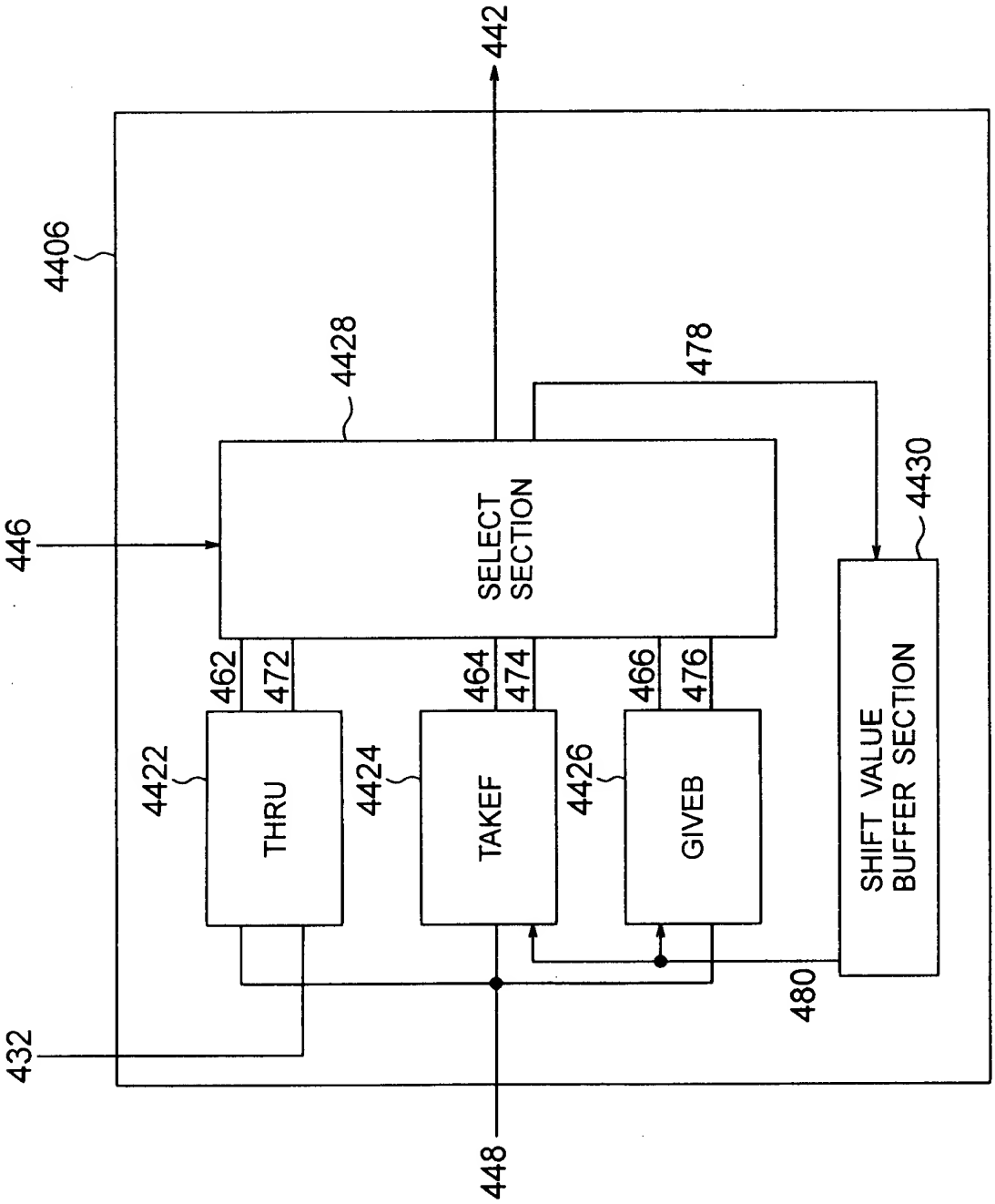
442
4406
4428
478
446
SELECT SECTION
4430
462
472
464
474
466
476
4422
THRU
4424
TAKEF
4426
GIVEB
SHIFT VALUE BUFFER SECTION
480
432
448

FIG. 16

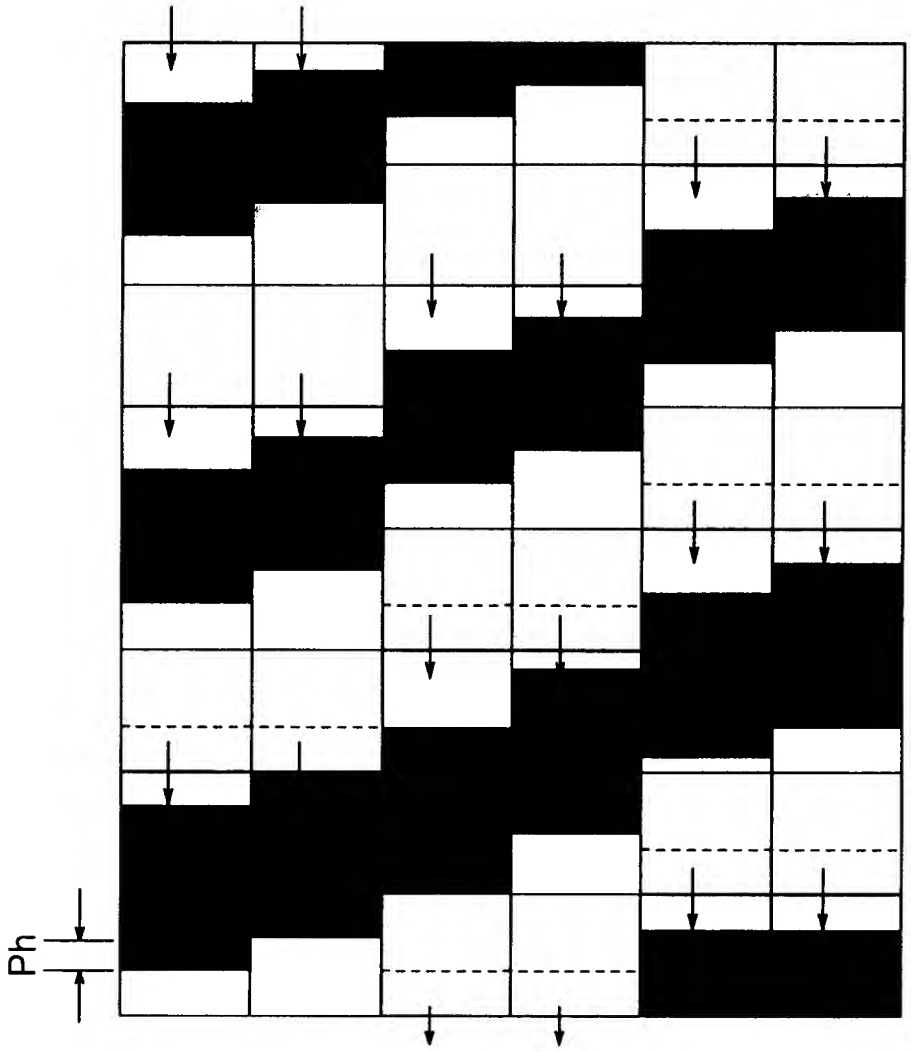

FIG. 18

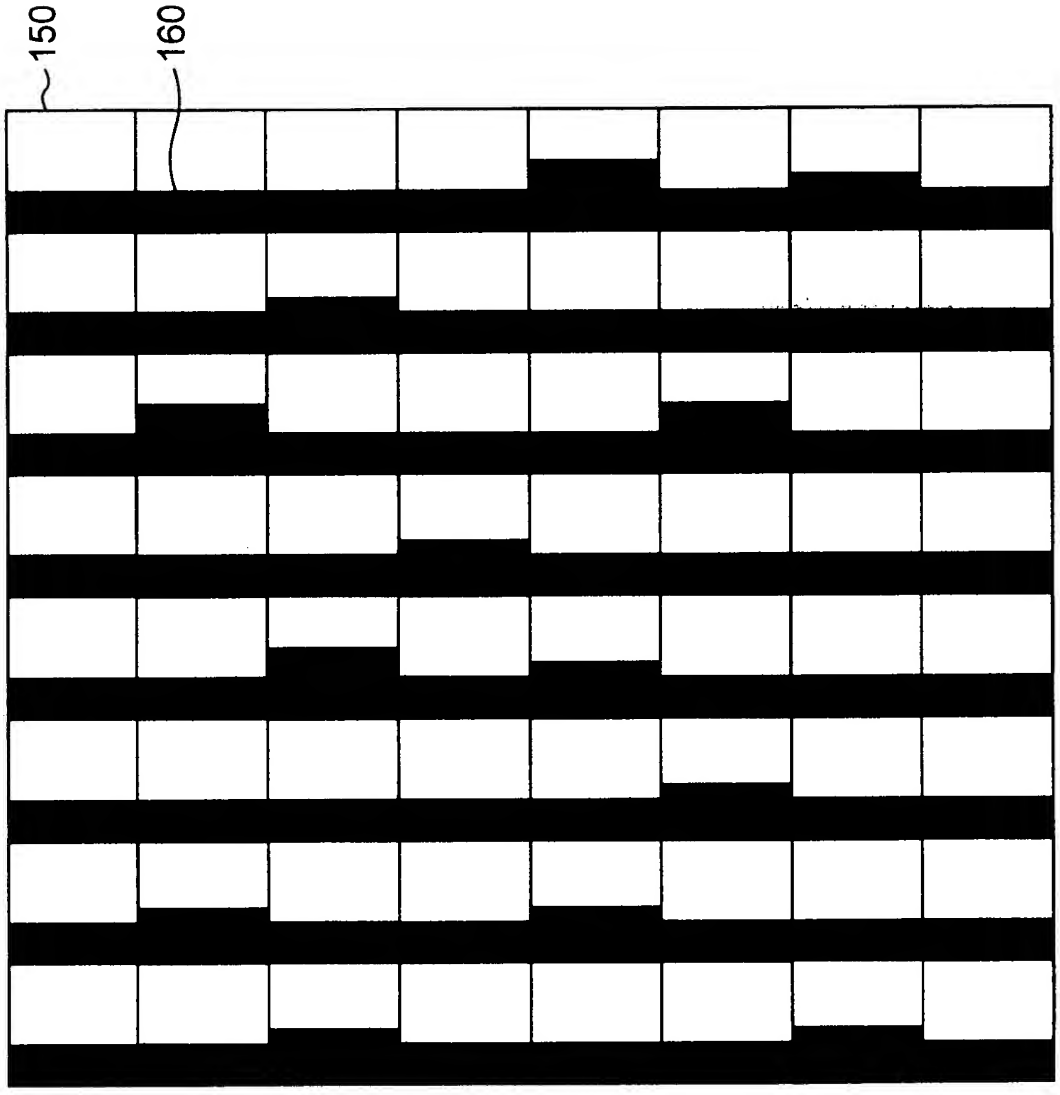

FIG. 19

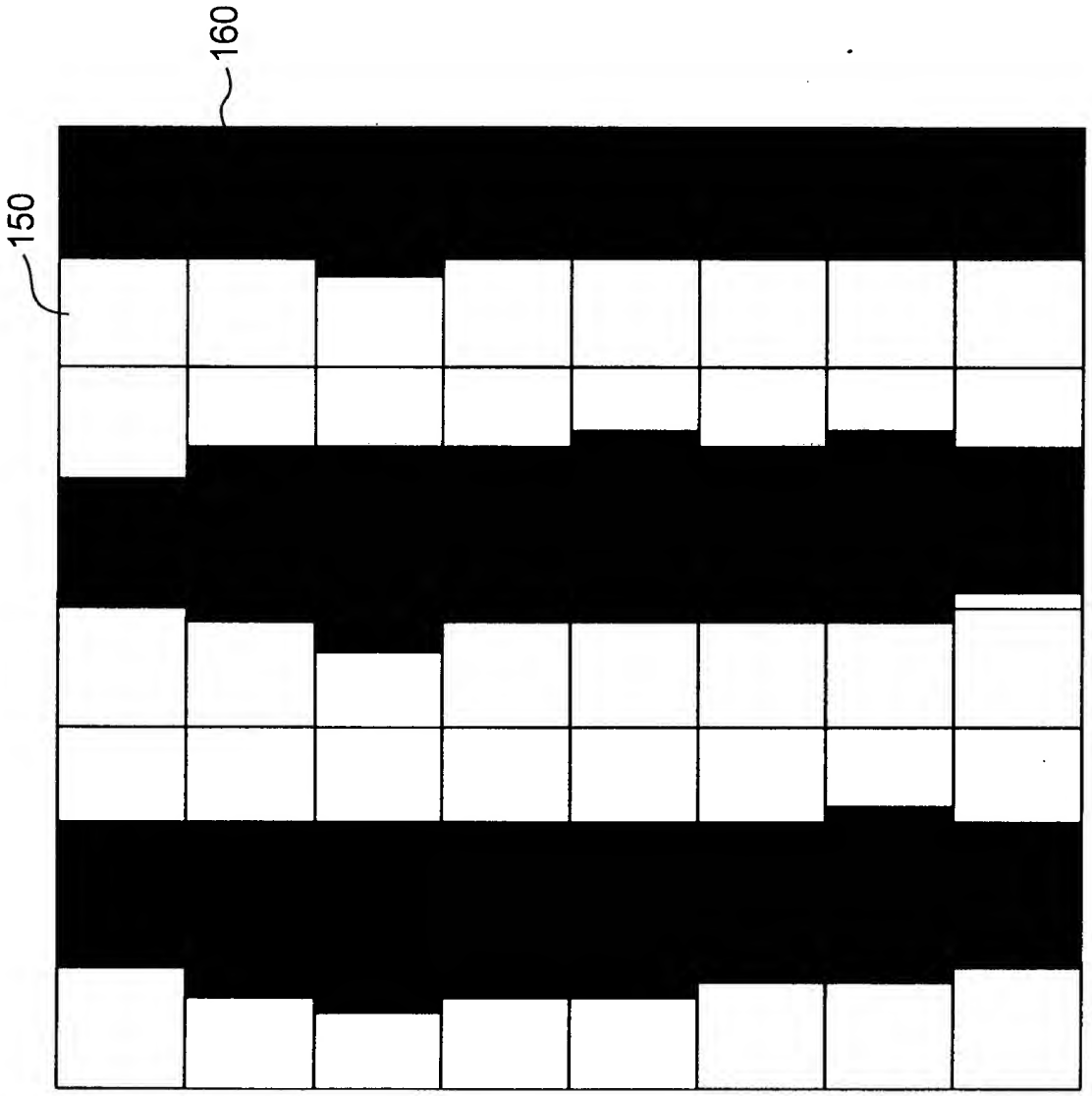

FIG. 20

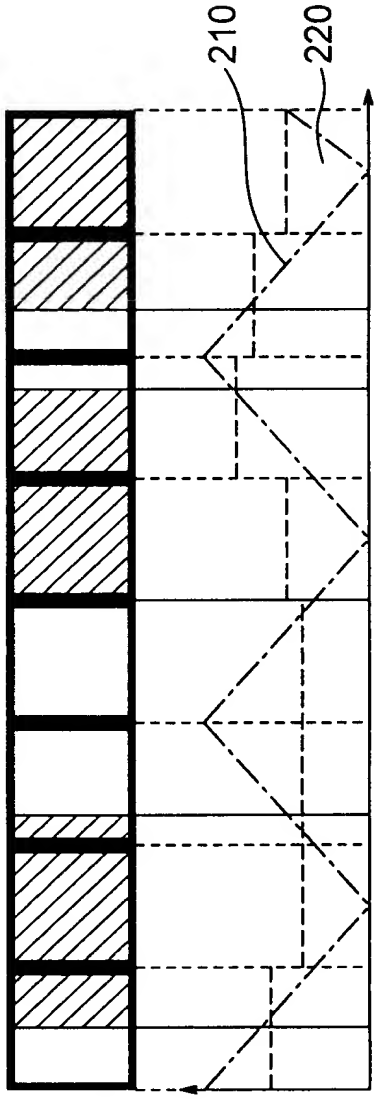

FIG. 21

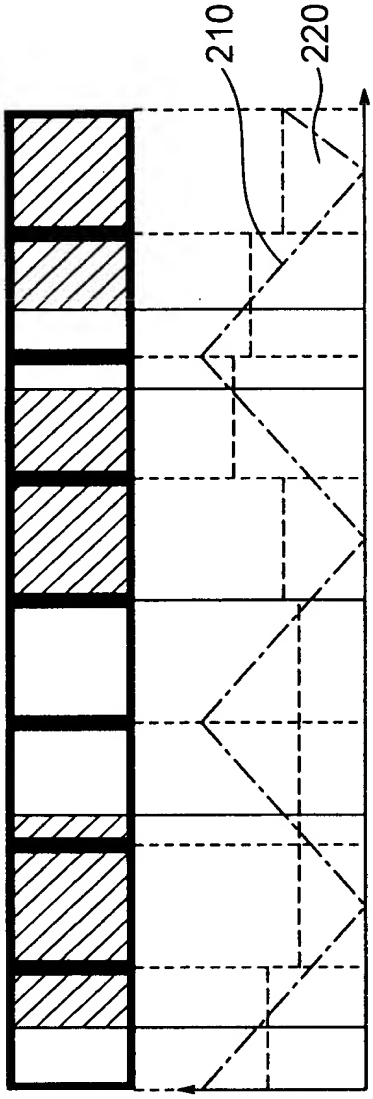

FIG. 22A

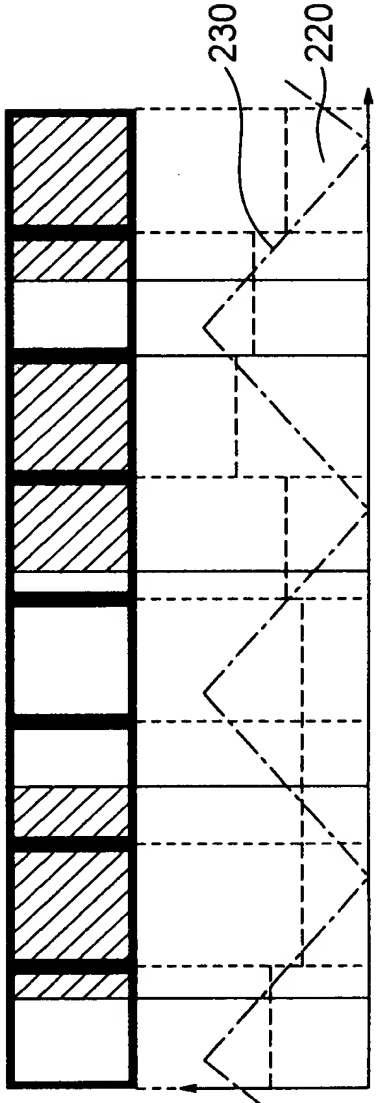

FIG. 22B

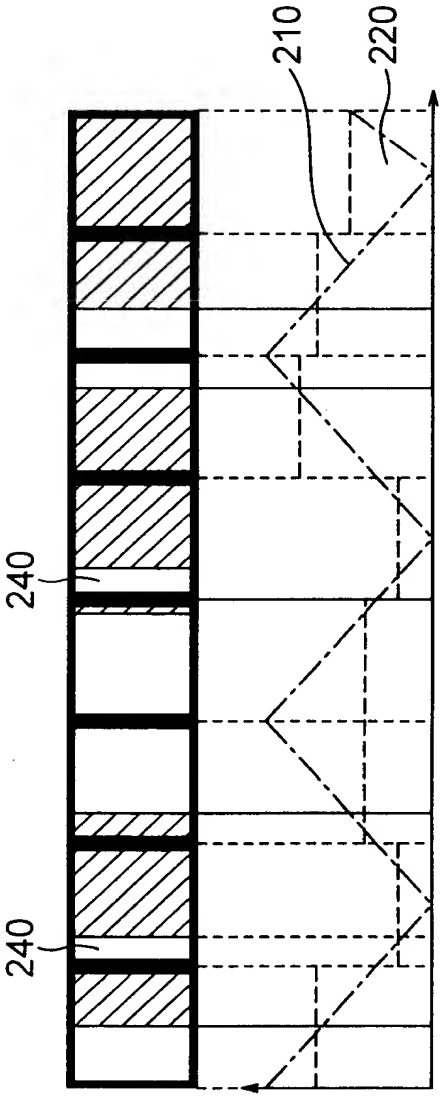

FIG. 23

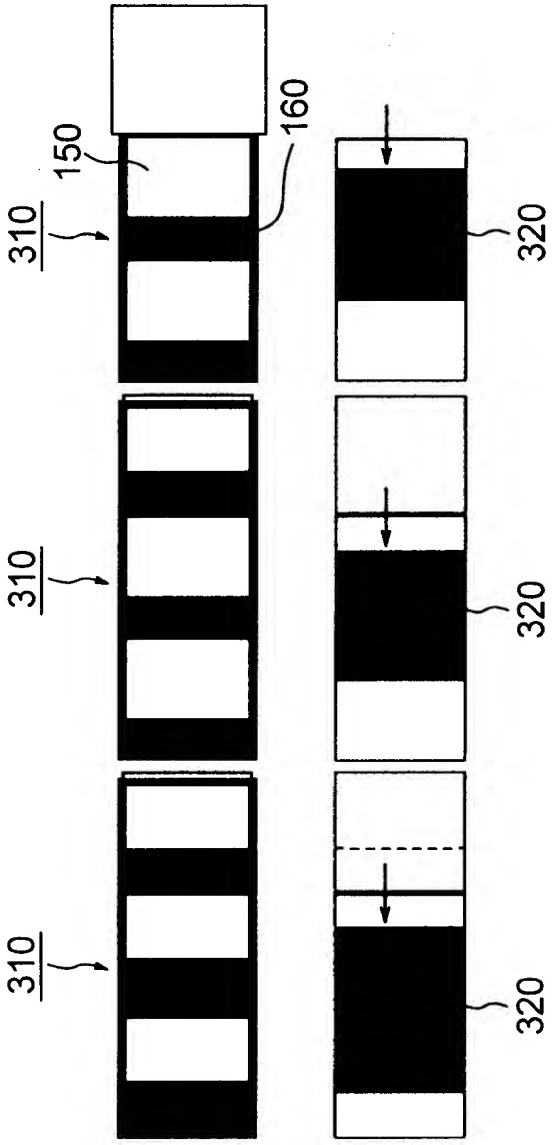

FIG. 24

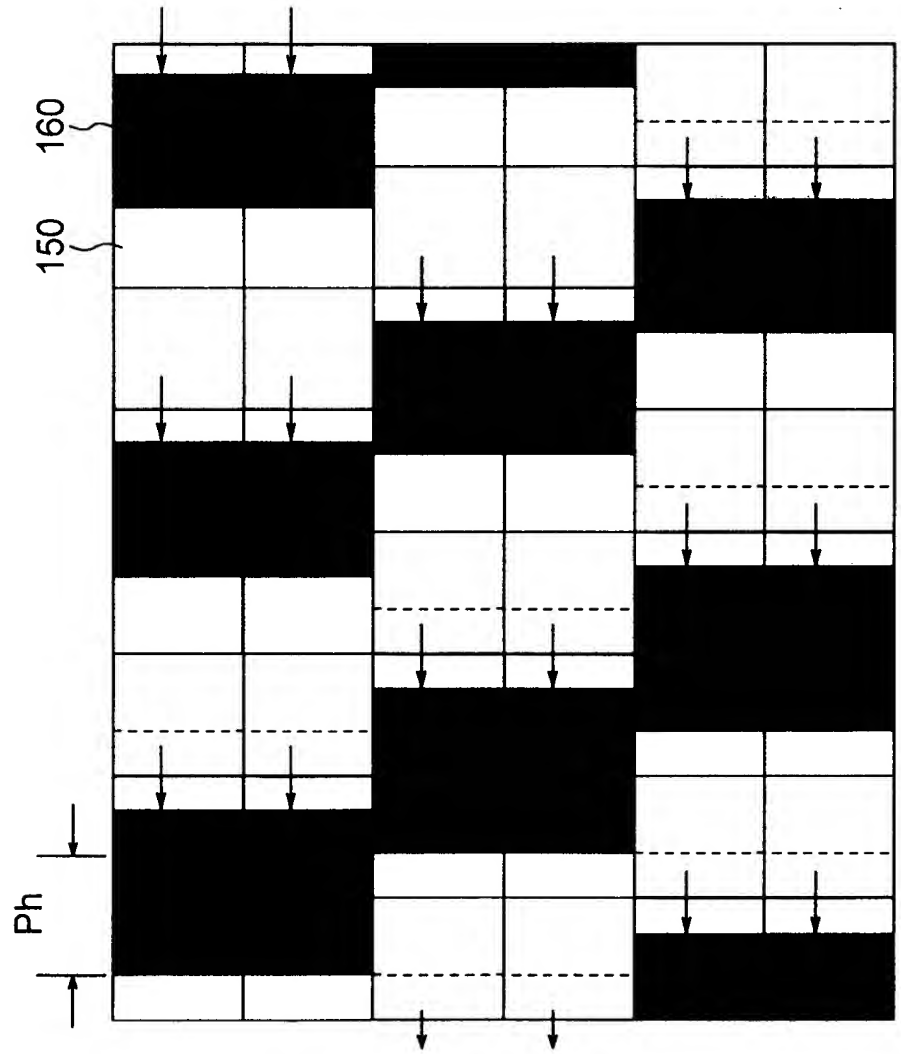

FIG. 25

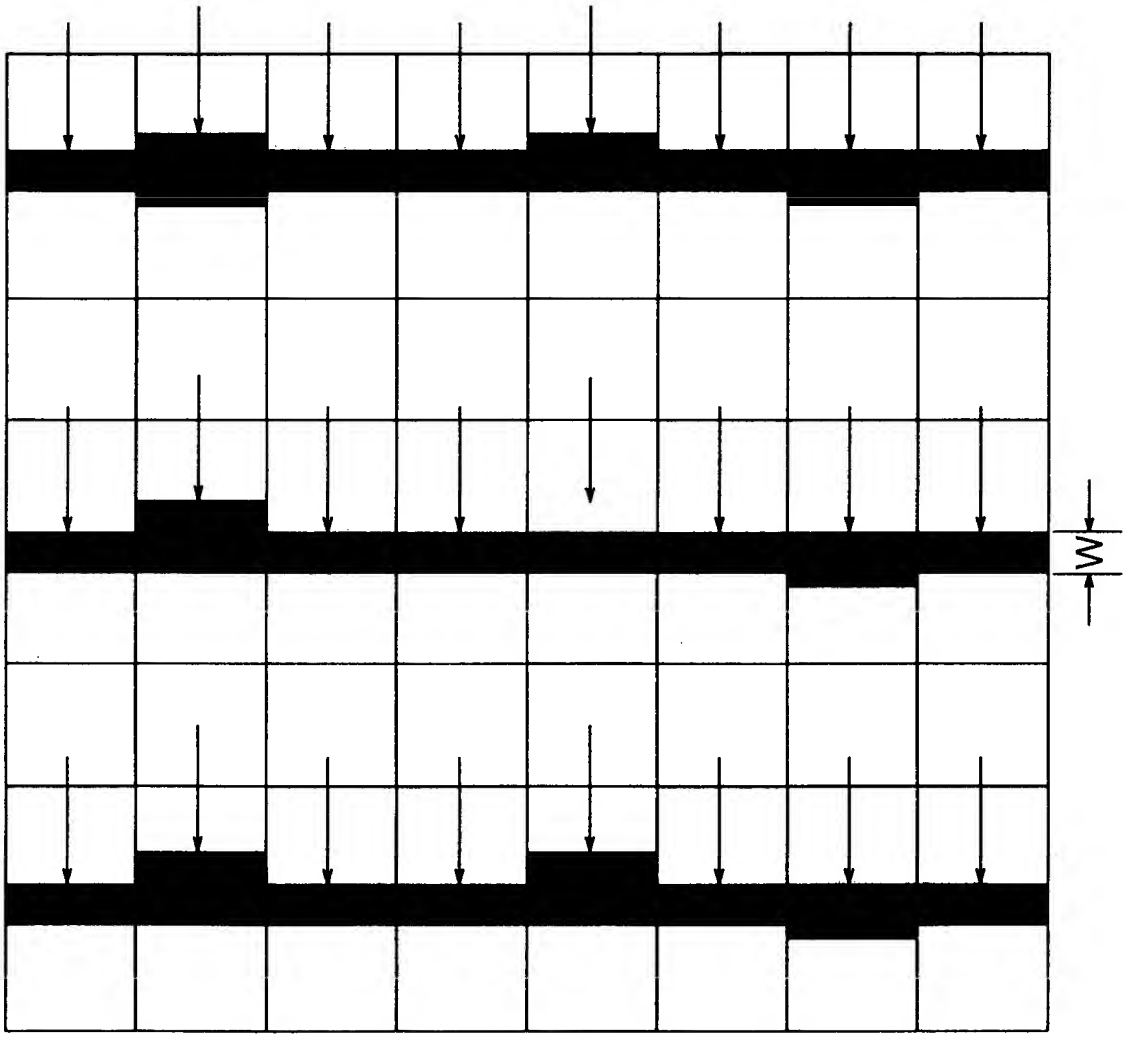

FIG. 26

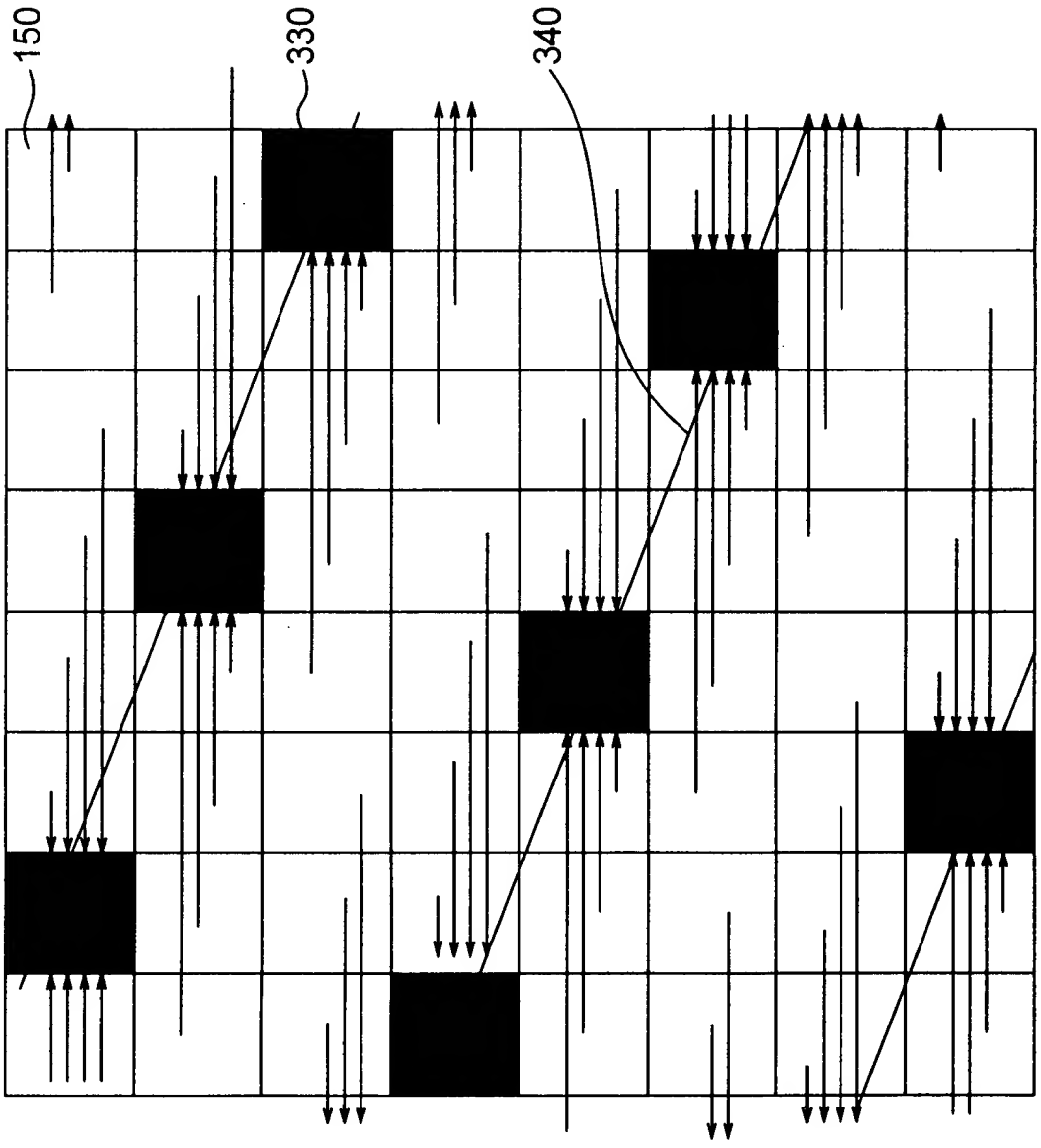

FIG. 27

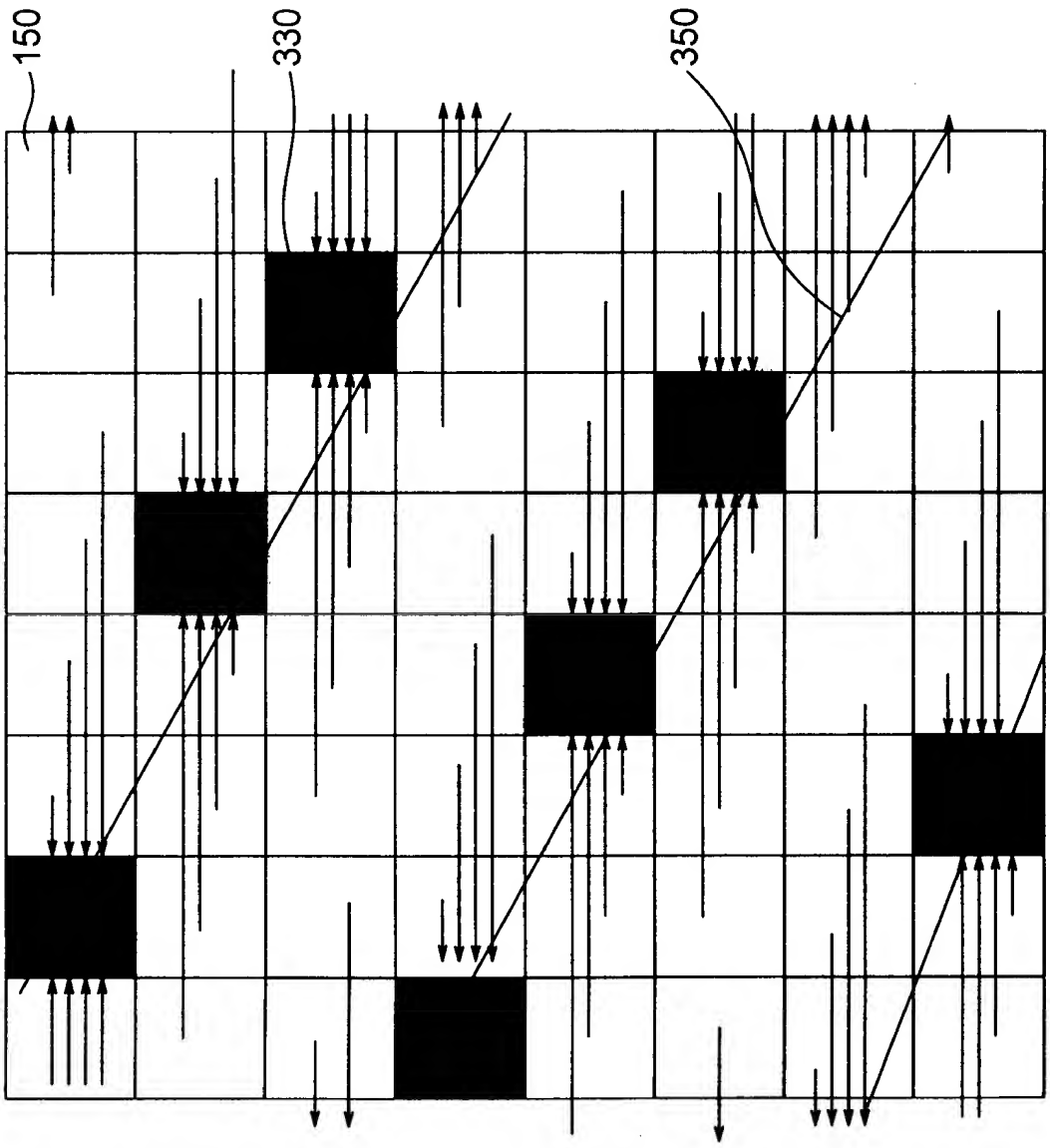

FIG. 28